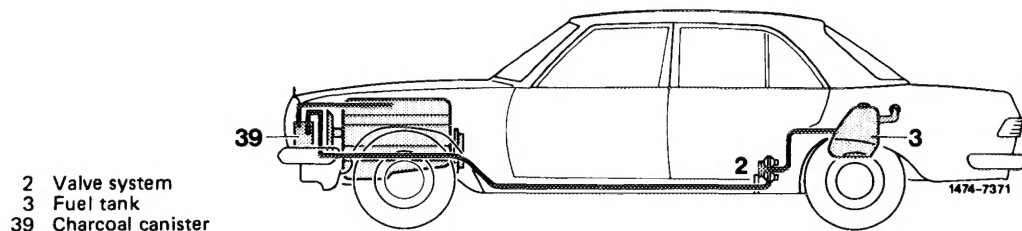


(AUS) (USA) 1977  
(J) 1977/78

The fuel evaporation control system which prevents the escape of evaporation vapors from fuel system into the atmosphere comprises the following components:



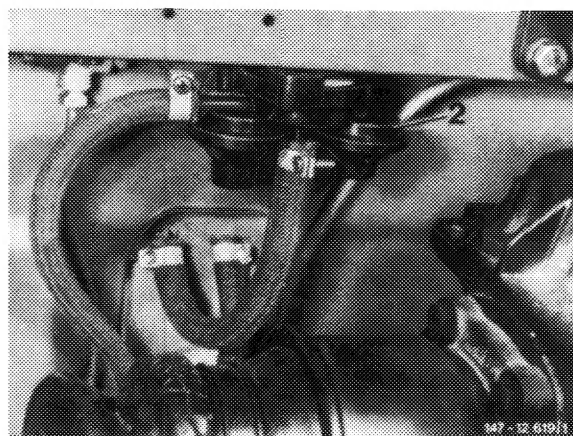
### Valve system

The valve system is mounted underneath vehicle at level of rear legroom.

The valve system comprises three valves:

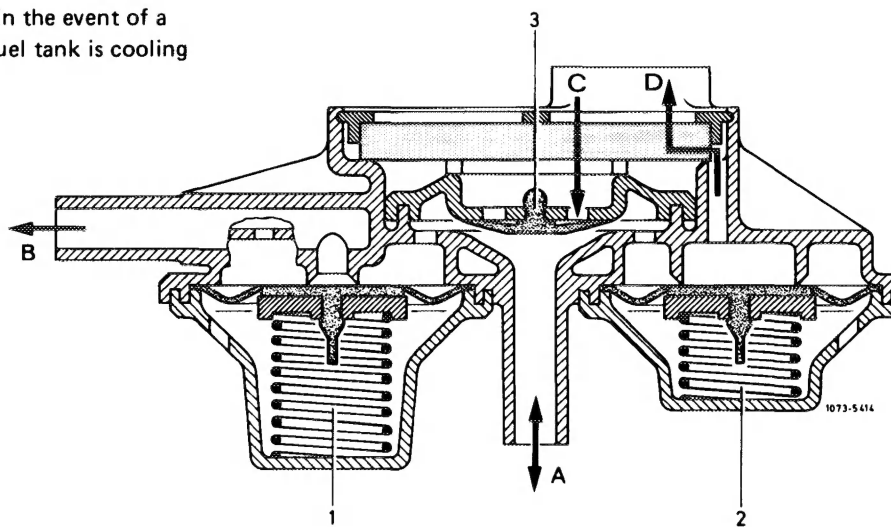
1. Pressure relief valve (negative vent valve)
2. Safety valve
3. Vacuum relief valve (positive vent valve)

The **pressure relief valve** opens at a slight overpressure. The evaporation vapors will flow through pressure relief valve (1) (direction B) in a line toward charcoal canister.



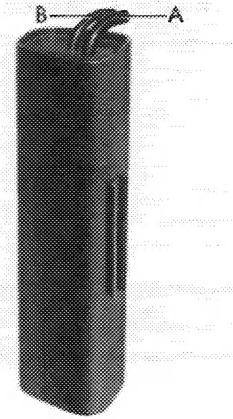
The **safety valve** opens in the event of overpressure in fuel evaporation control system. The fuel vapors will be vented directly into the atmosphere.

The **vacuum relief valve** opens in the event of a vacuum established when the fuel tank is cooling down.



## Charcoal canister

The fuel evaporation vapors from fuel tank are stored in charcoal canister and drawn off again while driving.

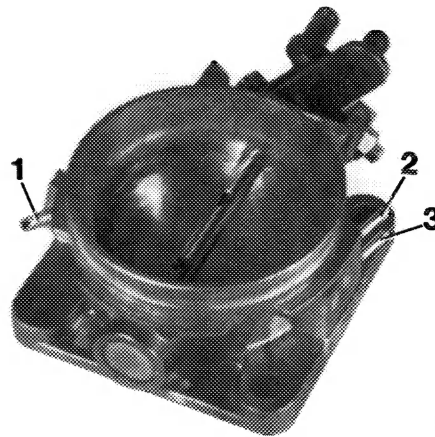


- A Connection, fuel vapors from tank
- B Connection, throttle valve housing

107-9128

## Throttle valve housing

The throttle valve housing is provided with a connection for drawing evaporation vapors from charcoal canister.



- 1 Vacuum connection ignition retard
- 2 Vacuum connection ignition advance
- 3 Vacuum connection charcoal canister

107-13053

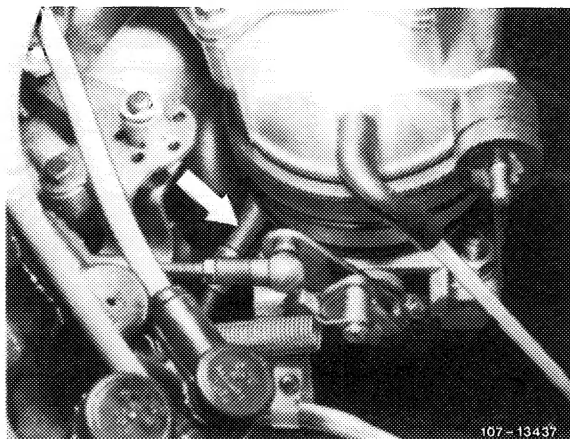
The fuel tank with fuel expansion tank and the valve system correspond to the already known version.

## Description of operation

The fuel vapors from fuel tank are routed to charcoal canister via valve system (2). The fuel evaporation vapors are stored in charcoal canister when the engine is stopped and are drawn off into throttle valve housing when the engine is running as from a given throttle valve position.

For checkup refer to: Exhaust gas test program

Arrow = Draw-off line to throttle valve housing

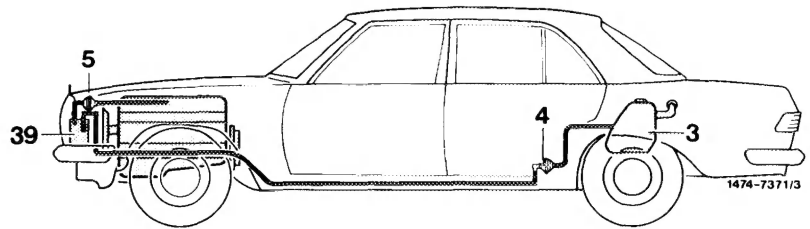


107-13437

(AUS) (USA) 1978–1980  
(J) 1979/80

The fuel evaporation control system has been completely revised to meet the new limits specified by law.

- 3 Fuel tank
- 4 Vent valve unit
- 5 Purge valve
- 39 Charcoal canister

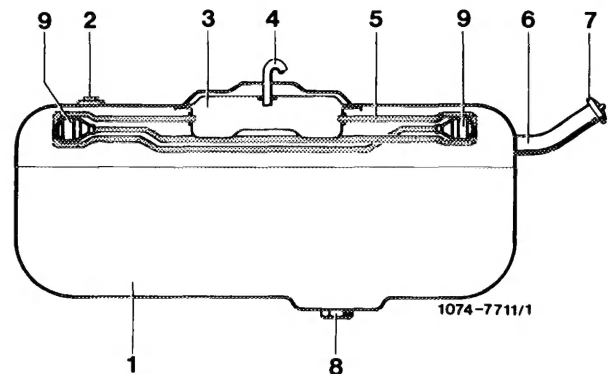


The system comprises the following components:

#### Fuel tank

The fuel tank with the tube system and the collecting tray are identical to the already known versions.

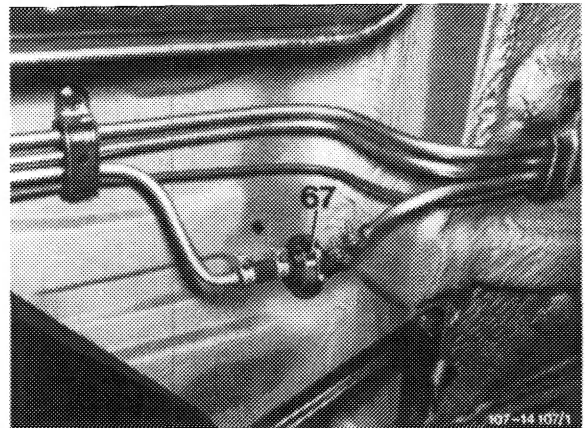
- 1 Fuel tank
- 2 Immersion tube transmitter
- 3 Expansion tank
- 4 Connection vent valve unit
- 5 Tube system
- 6 Filler neck
- 7 Closing cover
- 8 Connection fuel feed line
- 9 Check vessels entering production starting 1979
- (J) (model 123) starting 1980
- (USA) (model 123)
- (J) (USA) model 126 starting 1981



#### Vent valve unit

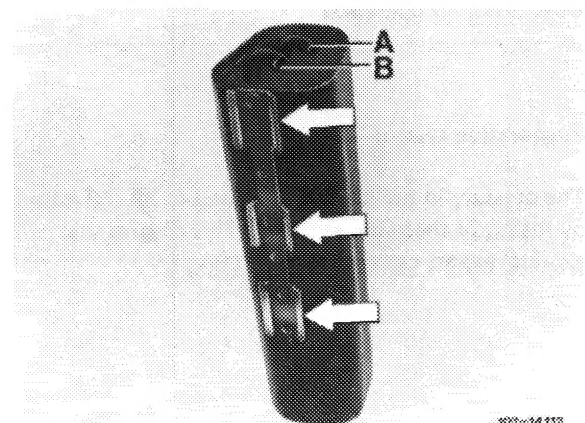
The vent valve unit (67) is mounted underneath vehicle at level or rear legroom and replaces the valve system known from model year 1977.

The unit comprises a pressure relief valve (negative vent valve) and a vacuum relief valve (positive vent valve).



#### Charcoal canister

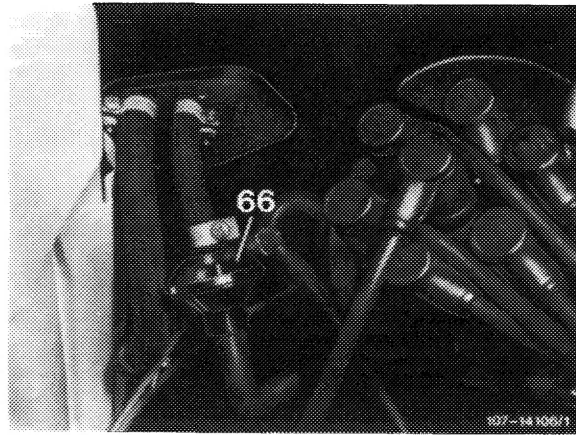
The charcoal canister is identical with the already known version, except that the fastening bracket (arrows) has been modified.



- A Draw-off line to throttle valve housing
- B Fuel tank vent line

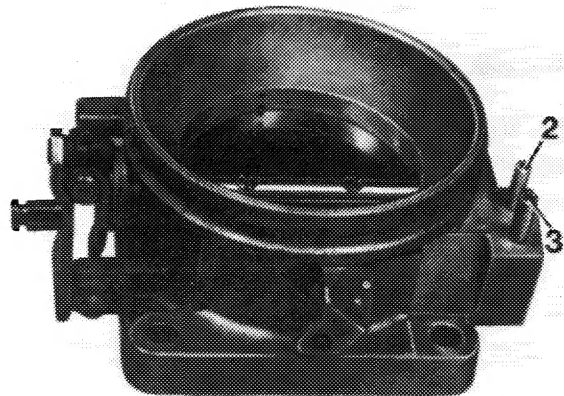
### Purge valve

The purge valve (66) is located in purge line from charcoal canister to throttle valve housing.



### Throttle valve housing

In comparison to model year 1977 the throttle valve housing has been slightly modified. To prevent a mix-up of the vacuum lines, the outside diameter of the vacuum line to the charcoal canister has been increased from 4 to 5 mm. To purge the fuel vapors from the charcoal canister, two purge bores are provided above the throttle valve.

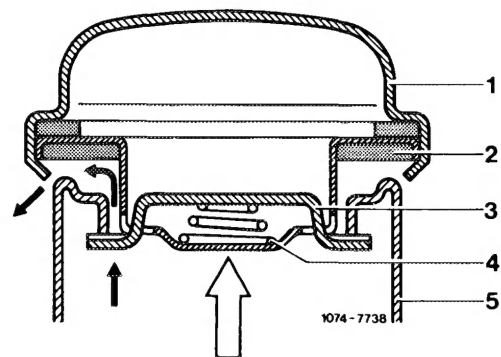


- 2 Vacuum connection, ignition advance
- 3 Vacuum connection, charcoal canister

107-14282

### Fuel tank cap

To avoid excessive pressure in fuel tank, the fuel tank cap has been modified.



- 1 Fuel tank cap
- 2 Gasket
- 3 Locking tab
- 4 Compression spring
- 5 Filler neck

1074-7738

### Description of operation

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#### Evaporation system

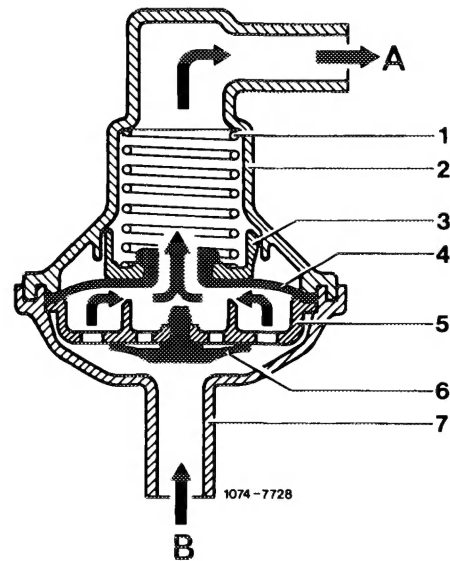
The pressure in fuel tank is increased to 30–50 mbar by means of the vent valve (67). This ensures that less fuel vapors can escape from tank.



If a pressure of 30–50 mbar is reached in the fuel tank, the pressure relief valve (4) opens and permits the fuel vapors to travel to the charcoal canister, where they are stored if the engine is not running.

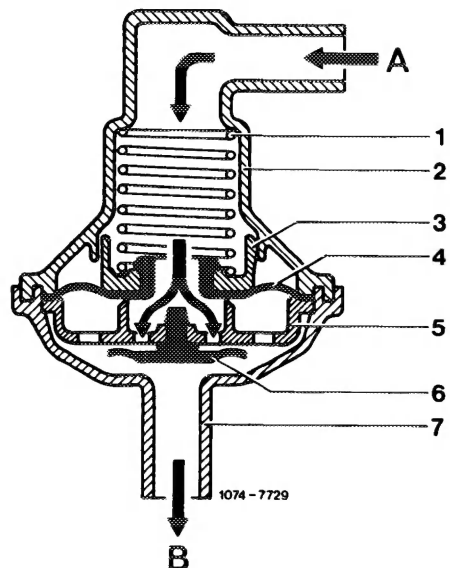
Vent valve unit, open to charcoal canister

- 1 Compression spring
- 2 Valve housing
- 3 Spring seat
- 4 Pressure relief valve
- 5 Valve disk
- 6 Vacuum relief valve
- 7 Connection fitting
- A Connection, charcoal canister
- B Connection, fuel tank



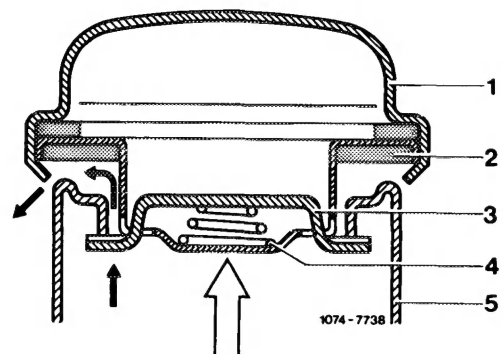
When the fuel cools down, the decreasing volume is balanced by the intake of air or of fuel evaporation vapors from charcoal canister via vacuum relief valve (6) starting at a vacuum of 1–16 mbar. If the vacuum in the fuel tank drops below 1 mbar, the vacuum relief valve (6) closes.

Vent valve unit, open to fuel tank



If the pressure in the fuel tank increases above 100–300 mbar due to a malfunction in the fuel evaporation system, the fuel vapors can escape via the fuel filler cap.

- 1 Fuel tank cap
- 2 Sealing ring
- 3 Locking tab
- 4 Compression spring
- 5 Filler neck



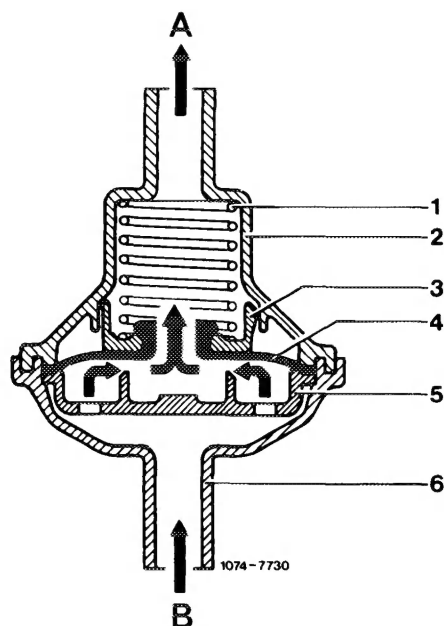
## Purge system

The charcoal canister is connected with the throttle valve housing by a hose in which the purge valve is installed.

When the engine is running and the vacuum in the purge line exceeds 30–50 mbar, the purge valve opens. The fuel vapors stored in the charcoal canister can be drawn into the throttle valve housing depending on the throttle valve position.

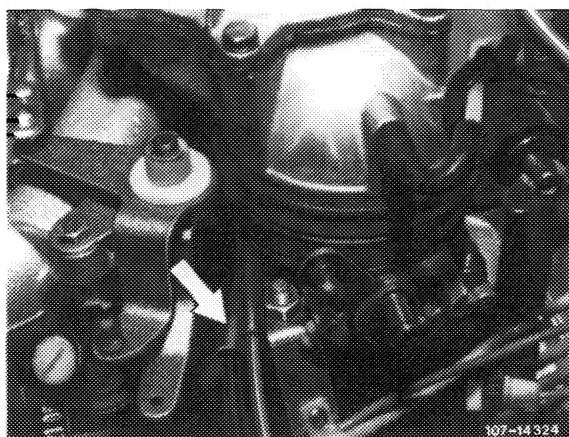
Purge valve open

- 1 Compression spring
- 2 Valve housing
- 3 Spring seat
- 4 Pressure relief valve
- 5 Valve disk
- 6 Connection fitting
- A Connection, throttle valve housing
- B Connection, charcoal canister

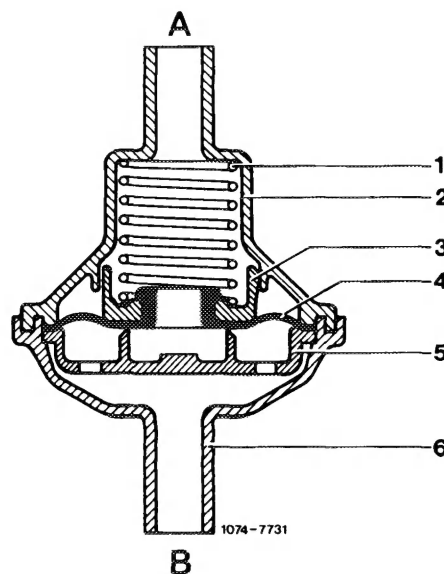


As the throttle valve is opened, the two purge bores in the throttle valve housing, which terminate in a common passage, are progressively exposed to the venturi vacuum. This will result in a metered purging in the lower partial load operating range of the engine without influencing the driving characteristics.

Arrow = Draw-off connection of throttle valve



At idle and during coasting (throttle valve closed) both purge bores are located on the atmosphere side of the throttle valve. The purge valve is closed and, therefore, no purging of fuel vapors from the charcoal canister takes place.



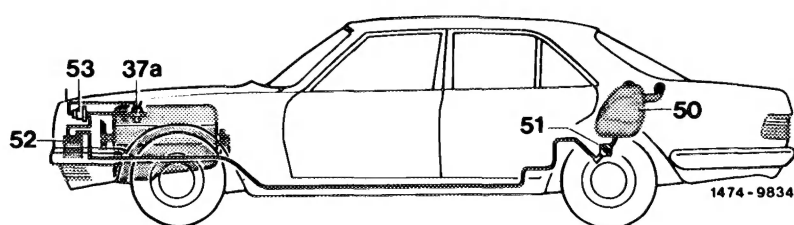
Purge valve, closed

(AUS) , (J) starting 1981, (USA) 1981

The fuel evaporation control system has been revised in comparison to model year 1980. The purge system is controlled by means of a thermovalve and is effective only above approx. 50 °C/122 °F coolant temperature.

### Functional diagram

- 37a Thermovalve 50 °C/122 °F
- 50 Fuel tank
- 51 Vent valve unit
- 52 Charcoal canister
- 53 Purge valve

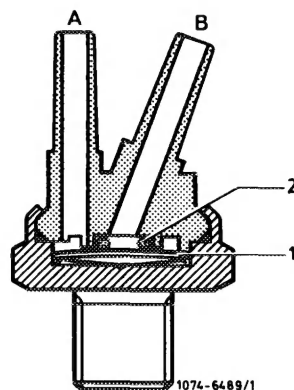


### Components of fuel evaporation control system

Only the new components are shown here.

#### Thermovalve 50 °C/122 °F (37a, color code red)

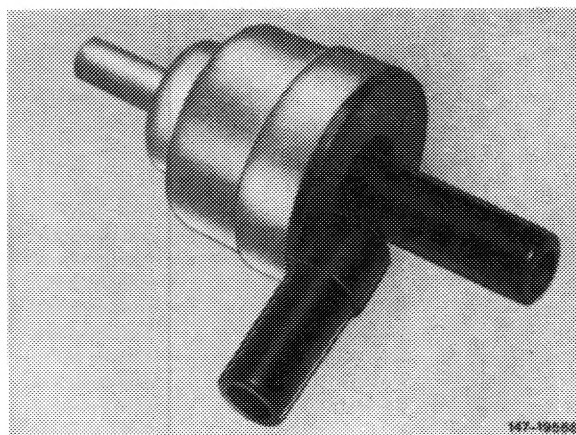
The thermovalve is installed in the sensor box on the cylinder head and opens at an engine cooling temperature of 50 °C/122 °F.



- 1 Bimetallic plate
- 2 O-ring
- A To purge valve
- B To throttle valve housing

#### Purge valve (53, vacuum-controlled)

The purge valve is installed in the purge line from the charcoal canister to the throttle valve housing. It can be recognized by the vacuum connection to thermovalve 50 °C.



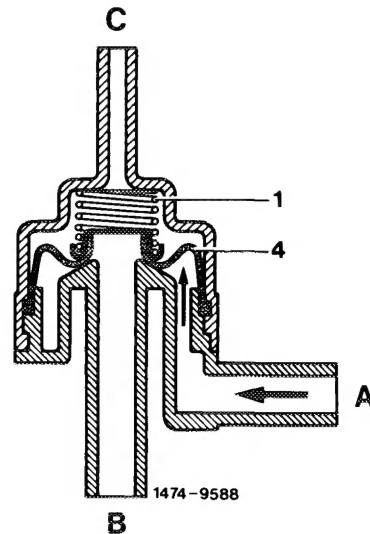
## Description of operation

### Purge system

The charcoal canister is connected to the throttle valve housing by a line in which the purge valve is installed.

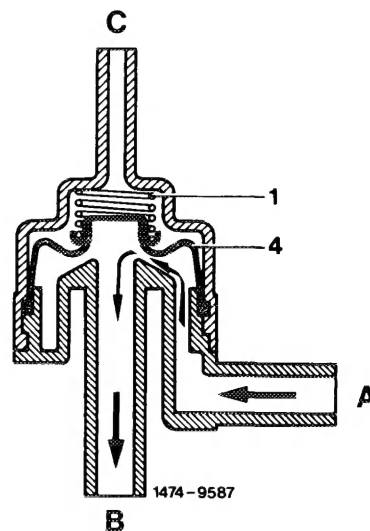
Purge valve closed

- A Connection, charcoal canister
- B Connection, throttle valve housing
- C Vacuum connection
- 1 Compression spring
- 4 Diaphragm



When the engine is running at a coolant temperature above approx. 50 °C/122 °F, intake manifold vacuum is applied to the purge valve through the thermostatic valve with the throttle valve slightly raised. The diaphragm (4) is pulled in upward direction against the spring force and connection from A to B is made.

When the throttle valve is opened still further, the two purge openings, which terminate in a common passage, are progressively exposed to the venturi vacuum. This will result in a metered purging in the lower partial load operating range of the engine without influencing the driving characteristics.



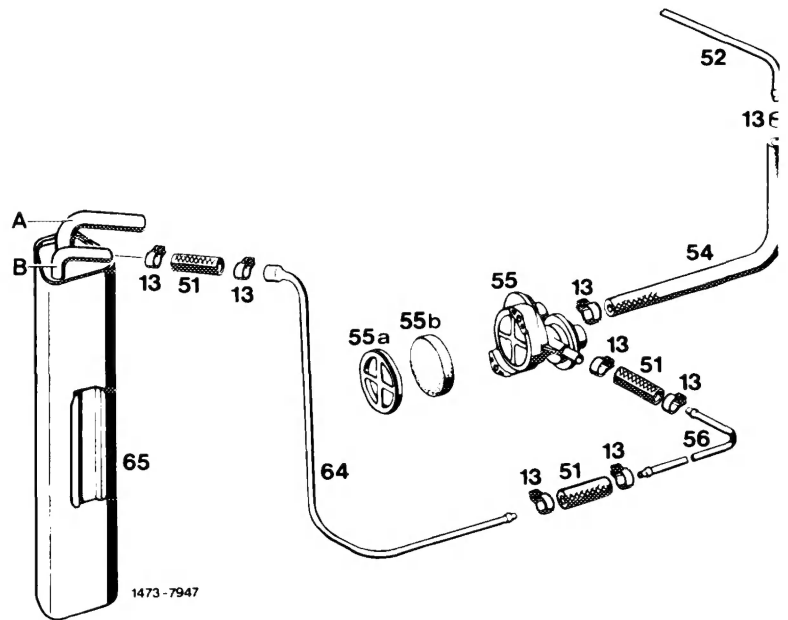
Purge valve, open

## Fuel evaporation control system

(AUS) (USA) 1977  
(J) 1977/78

- 13 Hose clamp
- 51 Fuel hose
- 52 Vent line from fuel tank
- 54 Fuel hose
- 55 Valve system
- 55a Cover
- 55b Filter
- 56 Vent line
- 64 Vent line
- 65 Charcoal canister

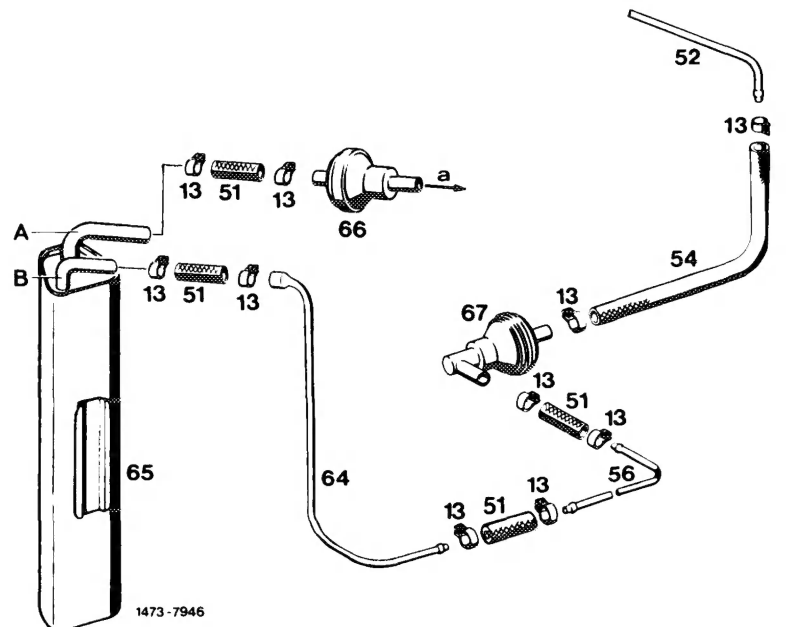
A Draw-off line to throttle valve housing  
B Fuel tank vent line

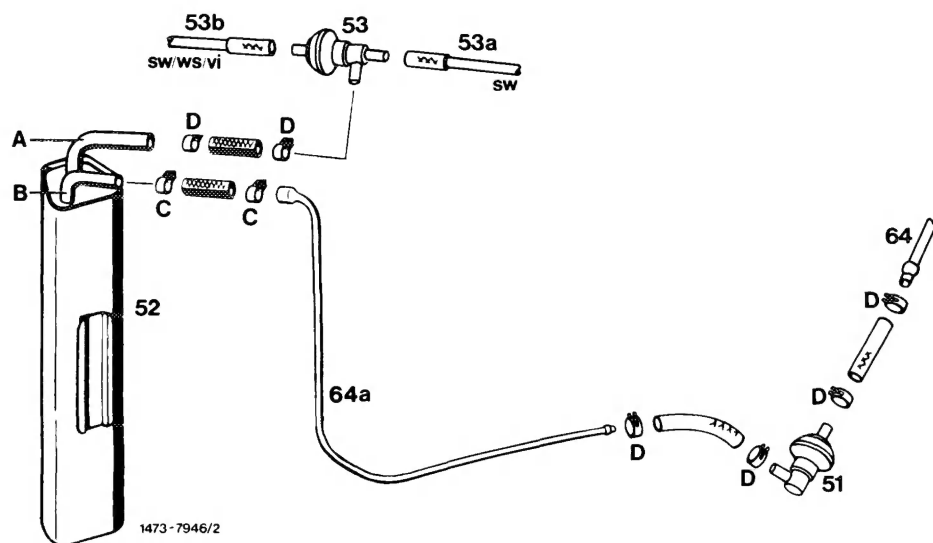


(AUS) (USA) 1978-1980  
(J) 1979/80

- 13 Hose clamp
- 51 Fuel hose
- 52 Vent line from fuel tank
- 54 Fuel hose
- 56 Vent line
- 64 Vent line
- 65 Charcoal canister
- 66 Purge valve
- 67 Vent valve unit
- a To throttle valve housing

A Draw-off line to purge valve  
B Fuel tank vent line





- 51 Vent valve
- 52 Charcoal canister
- 53 Purge valve
- 53a Draw-off line to throttle valve
- 53b Vacuum line
- 64 Vent line from fuel tank
- 64a Vent line to charcoal canister

- A To purge valve
- B To fuel tank
- C Hose clamp
- D Clamp

Color code  
sw = black  
vi = purple  
ws = white



**Note**

- (J) starting January 1973 up to production model year 1976
- (USA) 1973, 1974 Federal

High outside temperatures and self-heating of returning fuel will also heat fuel tank. Legislation in a number of countries does not permit these fuel evaporation vapors to escape into the atmosphere.

For this reason, the fuels are drawn from fuel tank via crankcase breather into the combustion chambers when the engine is running, and they are stored in crankcase when the engine is stopped.

**Model 114**

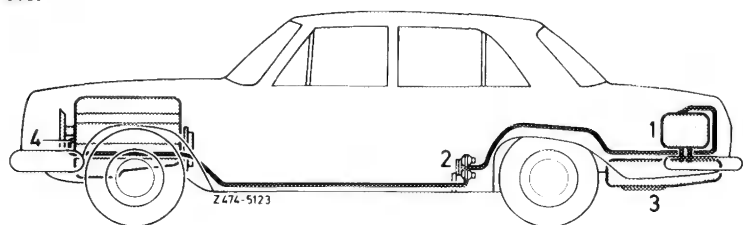
From fuel tank, two lines are leading to expansion tank (capacity 4.5 l). The expansion tank is mounted at the right in trunk.

Both lines serve as venting, overflow or discharge lines depending on position of fuel level in fuel tank, on fuel volume and on temperature.

At the highest point of the expansion tank is the connection for the positive and negative venting line to valve system (2).

**The fuel evaporation control system comprises:**

- Fuel expansion tank (1)
- Valve system (2)
- Fuel tank (3)
- Draw-off connection on crankcase (4)



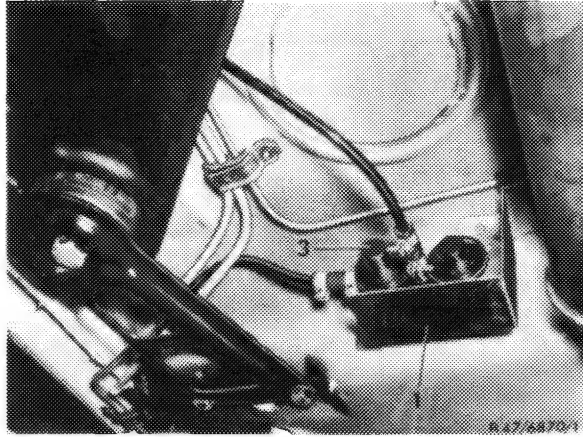
## Valve system

The valve system is mounted underneath vehicle at level of rear legroom.

The valve system comprises three valves:

1. Negative vent valve
2. Pressure relief valve
3. Positive vent valve

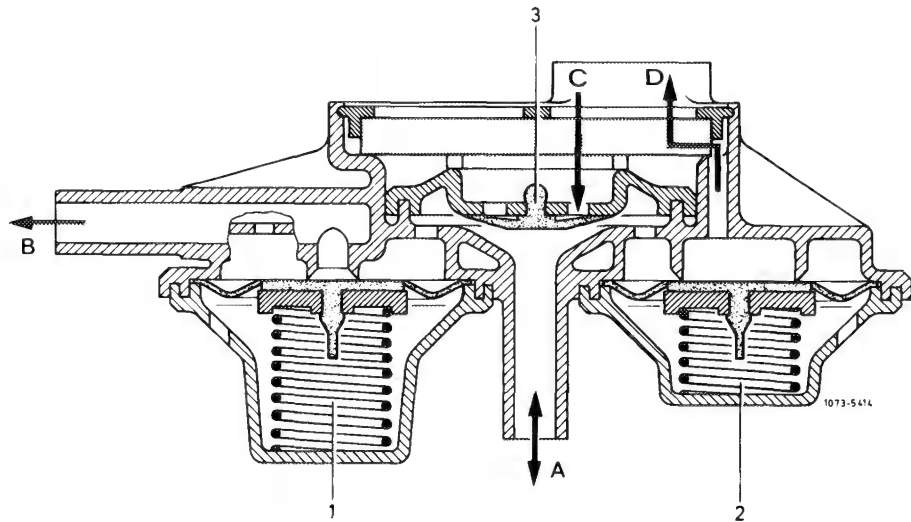
- 1 Protective box  
3 Valve system



The **negative vent valve** (1) opens at slight over-pressure. The evaporation vapors are flowing via a negative vent valve (1, direction B) into a line toward engine. The line enters into cylinder crankcase at connection point.

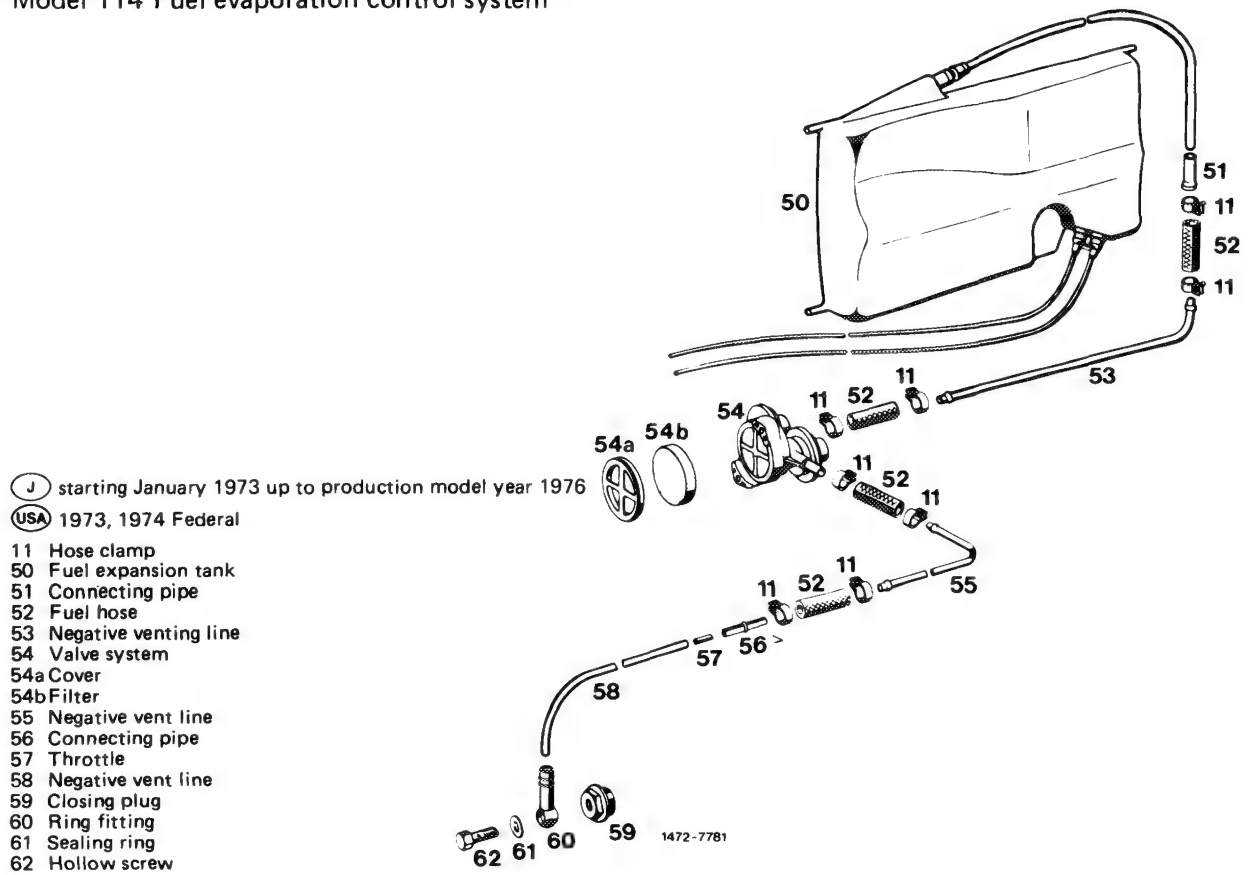
The **pressure relief valve** (2) opens as a safety valve in the event of overpressure in fuel evaporation system. The fuel vapors are bled directly into the open air.

The **positive vent valve** (3) opens whenever cooling down of fuel tank results in a vacuum.



- 1 Negative vent valve  
2 Pressure relief valve  
3 Positive vent valve  
A To valve/to expansion tank  
B To crankcase  
C Fresh air inlet  
D Outlet pressure relief valve

# Model 114 Fuel evaporation control system



A fuel evaporation control system has been installed to improve emissions which are not directly connected with engine combustion.

## Components of fuel evaporation control system

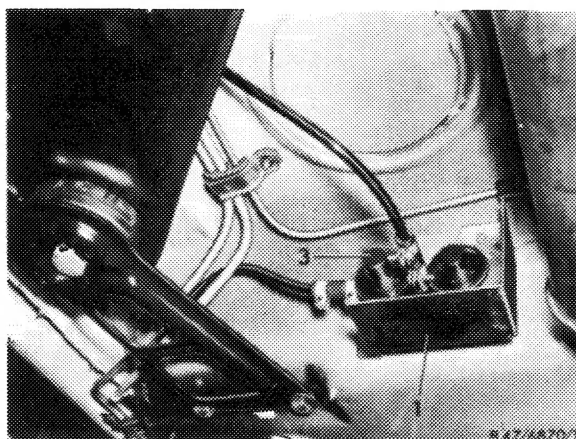
### Valve system

The valve system is mounted underneath vehicle in level of rear legroom.

The valve system comprises three valves:

1. Negative vent valve
2. Pressure relief valve
3. Positive vent valve

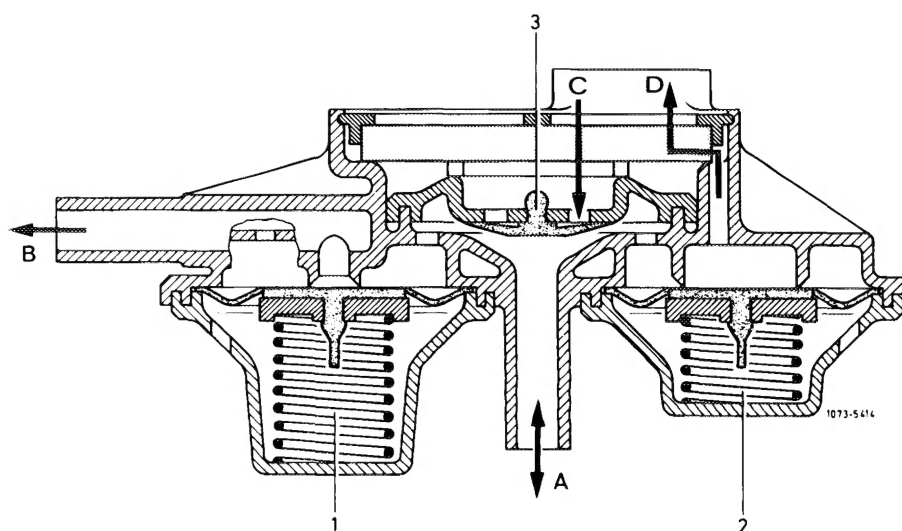
- 1 Protective box
- 3 Valve system



The **negative vent valve** opens at a slight overpressure. The evaporation vapors are flowing via negative vent valve (1, direction B) into the line toward charcoal canister.

The **pressure relief valve** opens as a safety valve in the event of an overpressure in fuel evaporation system. The fuel vapors are bled directly into the open air.

The **positive vent valve** opens whenever cooling down of fuel tank results in a vacuum.

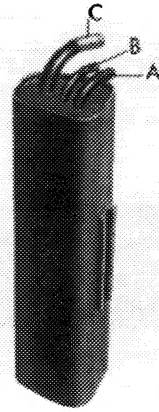


- 1 Negative vent valve
- 2 Pressure relief valve
- 3 Positive vent valve
- A To valve/to expansion tank
- B To charcoal canister
- C Fresh air inlet
- D Outlet pressure relief valve

## Charcoal canister

The fuel evaporation vapors from fuel tank and from float chamber are stored in charcoal canister and are drawn again out of canister when driving.

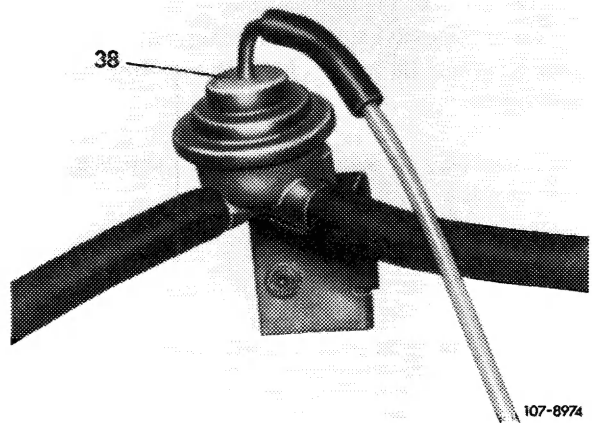
- A Tank vent connection
- B Draw-off valve connection
- C Float chamber-positive vent valve connection



107-9131

## Draw-off valve (purge valve)

The draw-off valve (purge valve) controls the volume of the fuel evaporation gases, which are drawn off by way of a connection in front of carburetor throttle valve depending on throttle valve position.

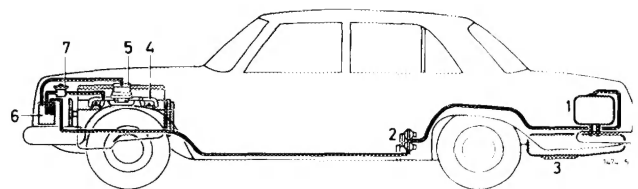


107-8974

## Operation

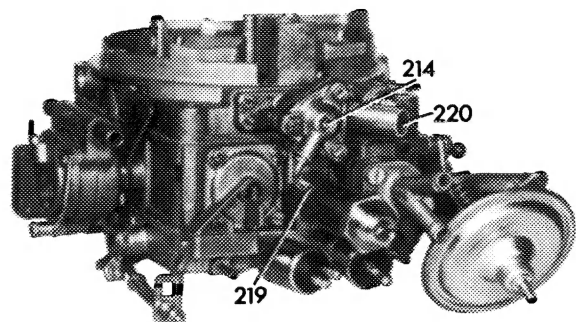
### Function diagram

- 1 Expansion tank
- 2 Valve system
- 3 Fuel tank
- 4 Intake pipe
- 5 Carburetor with positive vent valve
- 6 Charcoal canister
- 7 Draw-off valve (purge valve)



The fuel evaporation gases from fuel tank and from float chamber of carburetor are stored in charcoal canister when the engine is stopped, and are drawn from charcoal canister when the engine is running, depending on intake pipe vacuum.

The fuel evaporation vapors are routed directly into charcoal canister.

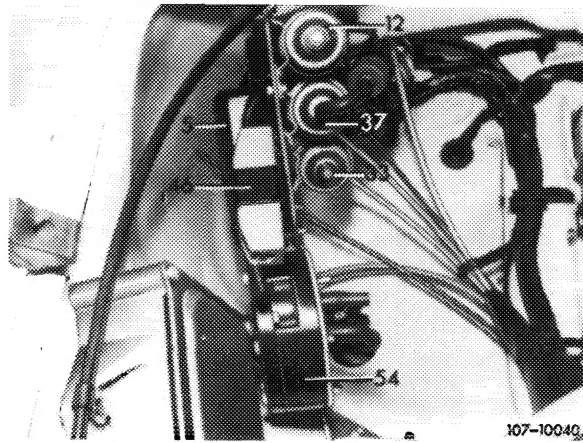


- 214 Float chamber positive vent valve
- 219 Vacuum connection
- 220 Negative vent connection

107-10093

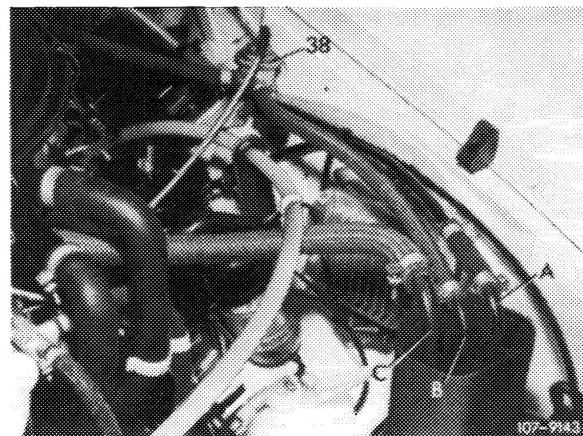
The fuel evaporation vapors from float chamber are flowing to charcoal canister only when the engine is stopped and the float chamber positive vent valve is open and are stored in charcoal canister.

With the engine running, the switchover valve (37) is energized and the diaphragm of the float chamber positive vent valve is provided with a vacuum, the valve will close and interrupt the connection to charcoal canister.



In dependence of the throttle valve position of the I. stage of the carburetor the diaphragm of the draw-off valve (38) is provided with a vacuum, the valve opens.

The intake pipe vacuum will draw the stored vapors from charcoal canister for burning.



- 38 Draw-off valve (purge valve)
- A Tank vent connection
- B Draw-off valve connection
- C Float chamber-positive vent valve connection



# Fuel evaporation control system

USA 1974 California, 1975/76 Federal and California

J 1976

